REMARKS

Reconsideration of this application and entry of this Amendment is respectfully requested.

At the outset applicant's attorney wishes to point out what appears to be an inadvertent typographical error in the Office Action Summary Status on page 2 of the Office Action of August 12, 2003 wherein the date indicated in box number 1 should be "May 27, 2003" rather than "May 23, 2001".

The claims have been amended in a sincere effort to more precisely recite the invention and to expedite the prosecution of this patent application. No new matter has been added. Support for the amendments to independent claims 1, 7 and 23 and the dependent claims can be found in the application on pages 6 and 7 and in the example on pages 17 and 18 as well as in other parts of the specification.

Claims 1,7 and 13-29 have been rejected under 35 USC 102(b) as anticipated by the article by Tygel et al, "*Multiple Weights in Diffraction Stack Migration*" (hereafter "*Tygel*").

It is noted that almost the entire text of the Office Action of August 12, 2003 appears to be a repetition of the Office Action of February 28, 2003 except for the text on page 5 wherein in response to applicant's arguments filed May 27, 2003 to the rejection of step (a) of claims 1,7 and 23 the examiner states as follows:

> "Tygel et al disclose in the Abstract, 'Three dimensional (3-D) prestack diffraction-stack migration methods (often called Kirchhoff migration/inversion) play a fundamental role in

> seismic imaging. In addition to estimating the location of arbitrarily curved reflectors and the angle dependent reflection coefficients upon them..."
>
> "*Tygel et al* further disclose a computerized depth model is constructed based on the reflectors seismic velocities used in the PSDM step (a) (equation 1: figures 1-4 and 6). One of the surfaces in the model was chosen as a target reflector (page 1827, first column, lines 21-30)."

The examiner states in response to applicant's arguments to the rejection of steps (c) and (d) of claims 1, 7 and 23 at the bottom of page 6 of the Office Action as follows:

> "*Tygel et al* disclose on page 1827, first column, lines 21-30, 'In particular, amplitude-perserving migrations that use a weighted diffraction stack (Kirchoff migration) to determine reflection coefficients can be performed more economically. After a vector-weighted diffraction stack has been done, only one weighted factor per (known) specular ray needs to be computed. The number of rays to which dynamic ray tracing is to be implied is thus drastically reduced. The result of the unweighted diffraction stack is then multiplied with this weight factor that yields the reflection coefficient at the corresponding reflection point."

Applicant respectfully submits the examiner has not fulfilled the obligation imposed under a 35 USC 102(b) anticipation rejection to show that the prior art reference discloses each and every element of the claimed invention. *In re Bond*, 15 USPQ2d 1566 (Fed. Cir. 1990); *Atlas Powder Company v. E.I. DuPont de Nemours & Company*, 224 USPQ 409 (Fed. Cir. 1984).

Thus, the examiner has not shown the particular portions of *Tygel et al* which anticipate each and every step of the claims. Unless the examiner can point out the page and line number of the reference and explain where anticipation exists for each step of the rejected claims, and for the dependent claims, this rejection should be reconsidered and withdrawn.

A significant difference between *Tygel et al* and the claimed invention is the choice and use of input data and weights designed to obtain the angle-dependent reflection coefficients.

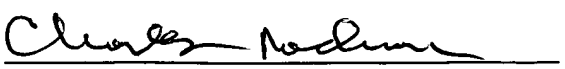
Thus, in the claimed invention, the original input data is subjected to just one migration, using a simple weight function. In the next step, the resulting migrated image is analyzed so that a target reflector is identified and selected. By ray tracing, synthetic data is produced on a small region around the target reflector. The resulting synthetic data is then subjected to the second migration. Accordingly applicant's claimed invention uses the same weight function as the one used in the first migration. For selected points on the target reflector under consideration, suitable ratios between the two migration outputs are calculated, and the desired angle dependent reflection coefficients are obtained.

The two migrations in the claimed invention are applied to two different input data. The first uses the original field dataset. The second uses a synthetic dataset produced after a target reflector is identified and selected from the image obtained as an output of the first migration. Thus, a distinct advantage of the claimed invention is a reduction of the analytical and the computational effort to determine a very specific and well identified region in depth.

In contrast, the choice and use of input data and weights designed to obtain angle-dependent reflection coefficients in *Tygel et al* is very different. *Tygel et al* use multiple weighted migrations performed on several sections of a region of the input field data, without identification or selection of a target reflector in depth.

Accordingly, in view of the above amendments and arguments, it is respectfully submitted that this application is now in condition for allowance, and such favorable action is respectfully requested.

Respectfully submitted,



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